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ABSTRACT

The Associate, Read and Connect (ARC) method is an instructional reading technique which employs cognitive mapping, or networking, to provide developmental reading students with a strategy for effectively dealing with college-level materials. ARC, based on the ability to utilize prior knowledge of a given subject matter, teaches students to organize their thoughts into a hierarchy of significance, in which a broad subject is broken down into its basic components. As the name implies, the technique consists of three stages: (1) the prereading, "associate" stage, in which students identify the topic and organize any prior knowledge of the topic into a network; (2) the guided reading stage, in which students preview a section of the text, develop questions based on the preview and on prior knowledge, and then read the material to answer these questions; and (3) the postreading, "connect" stage, in which students revise the network to represent the current state of knowledge, form an outline by grouping related details from the network, and write a summary based on this outline. The strategy was born out of a need to find a satisfactory method for teaching developmental college students the processes of notetaking, outlining, and summarizing. The main difference between ARC and strategies used in a lecture style class is the fact that the learning experience is not delivered via the instructor's lecture but is only monitored by the instructor, who works through the assignments with students. The method has proven effective in a developmental reading class through a comparison of pre- and post-course questionnaires. The comparison indicated a marked change in students' learning styles, including the more frequent utilization of study skills, and the ability to take more efficient notes, identify structural cohesiveness, and express main ideas with greater clarity. (JMC)

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ARC : An Alternative Teaching Strategy

for Developmental Reading

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Abstract

ARC is an instructional reading technique employing cognitive mapping, or networking, that yields positive affective results while giving students a strategy which allows them to effectively deal with college materials. This strategy is based on the ability of students to utilize prior knowledge of any given subject matter and assimilate new materials into their existing framework of ideas.

ARC is a mnemonic for a three stage strategy that teaches students to organize their thoughts into a hierarchy of significance, in which a broad subject is broken down into its basic components. The letters of ARC stand for Associate, Read and Connect. The three stages are as follows:

ASSOCIATE (Prereading stage)

1. Identify topic and prior knowledge of topic.
2. Organize prior knowledge of topic into a network.

READ (Guided reading stage)

3. Preview section of text.
4. Develop questions based on preview and prior knowledge.
5. Read to answer questions; record answers by questions.

CONNECT (After reading stage)

6. Add to or revise network to represent current state of knowledge.
7. Form outline by grouping related details from network under major headings.
8. Write a summary based on the outline.

This strategy was born out of a general frustration for finding a satisfactory method for teaching

developmental college students the processes of notetaking, outlining, and summarizing. After working with these students for one semester, it became apparent that the students' entire repertoire of learning tools was quite weak. They did not understand how they learned nor what changes were needed to improve their learning. The students tended to focus on words rather than ideas. There was little, if any, comprehension monitoring. They failed to realize that they didn't understand the material.

While investigating the current literature and research, we focused our attention on the areas of prior knowledge identification, student generated questions and development of graphic organizers. The studies by Tierney and Cunningham (1984), Stevens (1982), Hayes and Tierney (1982) found that the identification of prior knowledge increased the comprehension of text material. These studies adhere to the tenet that comprehension implies the building or developing of one point of understanding on top of another. Studies by Cohen (1983), Andre and Anderson (1959), concluded that self-generated questioning had positive results on student recall and comprehension and is an effective way of studying. In an early study, Hanf (1971) identified mapping as a verbal picture of ideas that allows

students to make insightful judgments about written material and increases the reader's reasoning abilities. Hansell (1978) used free form arrays to enhance middle school students' ability to prepare outlines. Of particular interest to us were the study skills research by Anderson and Armbruster (1980), and the findings of Geva (1981) and Canelos and Taylor (1981) describing the positive results of a network process as a learning strategy at the college level.

Following the investigation of the literature and research, and as a result of a questionnaire measuring the students' knowledge of their learning styles, study habits and attitudes, we found much support for the feeling that the current program would likely benefit from specific changes made within the teaching strategies used.

The development of concept building through the use of prior knowledge incorporated into a networking system seems to be a step toward developing a better technique for teaching students to outline and summarize text materials. Networking, like mapping, is a graphic presentation of a particular topic and identification of its component parts. As defined by Dansereau (1979), networking is the production of structured, two-dimensional maps that provide the students with a

spatial organization contained within a passage. The students are trained to produce node-link diagrams or networks. Node-link diagrams graphically present the relationship between the main ideas and subordinate ideas of a passage. The authors have utilized this technique as a foundation on which to build their strategy. Utilization of self-generated questions was added to this framework.

ARC teaches students to become active readers. This means having students become aware of how they should interact with material, specifically by determining a purpose for reading, identifying important aspects, focusing attention on major content, integrating known facts with new materials, monitoring comprehension, and engaging in self-questioning.

Procedure

To utilize the ARC strategy, instructors introduce networking using the ARC approach, previously described, via a selection in their text. Prior knowledge is assessed through oral exchanges and all "knowledge" is recorded on the chalkboard. Students identify the topic and center its name in the diagram. The subtopics and details are written in phrases around the topic and are connected by lines, thus forming a visual display of the material. When prior knowledge has been exhausted, the

instructor leads the class through a preview of the selection. In previewing the selection, the students direct their attention to the typography, pictures and their captions, reading the first sentence in each paragraph, and reading the questions supplied by the text at the end of the selection.

Next, the students are led by the instructor to generate questions about the topic using their prior knowledge and preview of the selection. Differences between open-ended and closed-ended questions are discussed, and then questions are formulated and the students then read the passage. They are instructed to write down the answers to their questions as they are located.

As a class, questions are answered orally. When a wrong answer occurs, students are directed to the text to substantiate their answers. The instructor asks the students about the processes they utilized to arrive at their answers. Students are directed by leading questions so that they are able to identify fallacies in thinking and are then able to correct them satisfactorily. Upon completion of this activity, the comprehension questions at the end of each section of the text are answered and discussed.

After reading the passage, the existing network is

redesigned to include all knowledge in the student's schemata. From this network, ideas are organized into groups and an outline is formulated. Students are directed to write a summary from their outlines, stressing the need to incorporate main ideas from the network and outline into the summary.

Upon completion of the initial skill instruction, the students use this strategy in a variety of practice exercises excerpted from college textbooks. Application is made from data introduced to actual use of the skill in text materials.

Rationale

In order for students to master the skills of outlining and summarizing, they must first be able to comprehend the material that is to be addressed. By teaching the student to employ previously known facts as a basis upon which to build, the authors believe that the students will begin to understand the important relationship between prior knowledge and the understanding of new concepts. This belief is supported by the research in the area of reading comprehension pertaining to schema theory. Knowledge already stored in a reader's memory is referred to as the reader's schemata. Schema theory states that the interaction of new information with the reader's existing schema, or

organized knowledge of the world, provides much of the basis for comprehending (Anderson and Pearson, 1984). Identifying all prior knowledge of the subject provides the readers with a base on which to add new material to an existing schema..

The major difference between this strategy and those used in the lecture style class lies in the fact that the learning experience is not delivered via the instructor's lecture but is monitored by the instructor. The instructor works through the assignments with the students. Modeling the procedure, guiding the students through it and redirecting as necessary, allows the instructor to immediately identify an area with which a student may be having difficulty. The shift in instructor responsibility varies from imparting knowledge to guiding students to pull that same information from the texts themselves, thereby making the students more responsible for their own learning. Along with monitoring, the instructor's role is to help students assimilate the new data into their existing frameworks for each particular area and to help them develop self-evaluation methods relevant to their learning.

This may be accomplished in a number of ways. The instructor leads students to develop pertinent questions

and allows them to correct any prior misknowledge. Mistakes can be seen as a means whose end is the accumulation and assimilation of more accurate information. When students make mistakes and are led back through the reading material to find the correct information, their errors can be corrected through discussion of previous information and how it relates to this new information. Sometimes, rereading will be enough to correct mistakes. Interaction between students will also serve to pull together knowledge that has been overlooked, misread or misunderstood. The end result is that students realize their errors and improve their ability to utilize options for correcting mistakes. The instructor's participation is required to direct and record students' responses. Verbal interaction on the instructor's part should decrease as students feel more comfortable expressing themselves to each other and as their ability to generate appropriate questions becomes more proficient.

Observed Results

The authors have been utilizing ARC in their Developmental Reading courses for several years. The measure of success, although not statistical, can be seen through the students' successful completion of the course, their re-enrollment in upper level reading

courses, as well as student feedback and teacher observation.

Comparison of student questionnaires, pre-class and post-class, indicated a marked change in awareness of their personal learning styles: Students indicated that they utilized study skill techniques more frequently in all their course work. They felt comfortable with identifying main ideas, and thus were able to take more efficient notes from their textbooks. Students also indicated that they were more confident when taking exams because they know how to prepare.

Observation by the instructors indicated that students were now able to identify structural cohesiveness and express main ideas with greater clarity. They felt that the text material was easier to understand and outlining and summarizing became easier for them. Student questions became more abundant and they included more open-ended questions.

For the authors, use of the ARC strategy has created a relaxed atmosphere in which the students developed a degree of confidence in themselves. This has been demonstrated by their willingness to make contributions to the class. The classes have truly become interactive.

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